

**BEFORE
THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA**

**SURREBUTTAL TESTIMONY
OF
AARON L. ROTHSCHILD**

**ON BEHALF OF
THE SOUTH CAROLINA DEPARTMENT OF CONSUMER AFFAIRS**

DOCKET NO. 2020-125-E

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I. SUMMARY OF DR. VANDER WEIDE'S COMMENTS

Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?

A. The purpose of my Surrebuttal Testimony is to respond to the following issues addressed in Company witness Dr. Vander Weide's Rebuttal Testimony:

- Application of DCF Model
- Application of CAPM
- Cost of Debt

As addressed below, Dr. Vander Weide's criticisms are invalid and should be rejected.

II. APPLICATION OF CONSTANT GROWTH DCF

Q. PLEASE SUMMARIZE DR. VANDER WEIDE'S CRITICISM OF YOUR APPLICATION OF THE DCF METHOD.

A. Dr. Vander Weide makes the following criticisms of my constant growth DCF method:

1. The annual DCF model does not provide an accurate cost of equity estimate;
2. The BR + SV method is logically circular, or inconsistent;
3. The Growth rate estimate I use in my DCF model is subjective;
4. My retention ratio is lower than forecasted by Value Line;
5. My external financing growth rate is too low because I eliminate three of the highest values without also eliminating the lowest values.

1 **Q. DR. VANDER WEIDE CLAIMS THAT YOUR DCF MODEL PRODUCES A**
2 **DOWNWARDLY BIASED ESTIMATE OF THE COST OF EQUITY BECAUSE IT**
3 **ASSUMES COMPANIES ONLY PAY DIVIDENDS AT THE END OF EACH**
4 **YEAR, RATHER THAN AT THE END OF EACH QUARTER. PLEASE**
5 **RESPOND.**

6 **A.** Dr. Vander Weide's claim that my DCF model produces a downwardly biased cost of
7 equity because of the way it calculates dividend payments is incorrect. As explained on
8 page 37, lines 11-14 of my Direct Testimony, I estimate next year's dividend rate by
9 increasing the quarterly dividend rate by $\frac{1}{2}$ of the current actual quarterly dividend rate.
10 Footnote 27 on the same page of my direct testimony shows an example that demonstrates
11 that my method of estimating next year's dividend rate produces essentially the same result
12 as if I had assumed dividends are paid quarterly.

13 **Q. HOW DO YOU RESPOND TO DR. VANDER WEIDE'S CLAIM THAT YOUR**
14 **DCF METHOD IS LOGICALLY CIRCULAR, OR INCONSISTENT?**

15 **A.** My Constant Growth DCF method is not logically circular because my conclusion (market-
16 based cost of equity that I recommend be applied to DESC's book value) is not an input.
17 Circular reasoning arises when we start with what we are trying to end with. I am not
18 calculating the market-based cost of equity for DESC with the market-based cost of equity
19 for DESC as Dr. Vander Weide implies. My input is the earned return on book equity and
20 Zacks'¹ long-term earnings per share forecast (not market return), and I use data from other

¹ Zacks Investment Research provides independent research company that provides financial data and analysis including consensus earnings-per-share (EPS) estimates.

1 utility companies (not DESC).² Additionally, my cost of equity result is based on data up
2 to a specific date (September 30, 2020), and therefore, my DCF cost of equity result could
3 not have been influenced by DESC's proposed authorized return in this proceeding.
4 Therefore, my Constant Growth DCF method is not circular.

5 Dr. Vander Weide's claim that my Constant Growth Method is circular contradicts
6 his own definition of the cost of equity. In particular, he says "There is also agreement
7 among economists that the cost of equity is both forward looking, and market based."³ If
8 the cost of equity is market-based, it is not circular to use accounting returns. Additionally,
9 applying a market-based cost of equity to book value is consistent with the regulatory
10 principles of original cost ratemaking. Dr. Vander Weide's comparison of my Constant
11 Growth DCF results to the expected return on book equity is problematic not just because
12 he is confusing market returns and accounting returns. Applying a market-based cost of
13 equity to anything other than the original cost of DESC's investments as measured by book
14 value would violate fundamental principles of original cost ratemaking and result in
15 overcharging consumers.

16 **Q. COULD DR. VANDER WEIDE'S CLAIM THAT YOUR DCF METHOD IS**
17 **LOGICALLY INCONSISTENT BE APPLIED TO HIS OWN DCF METHOD?**

18 **A.** Yes. If my DCF method is circular, then his is as well. Dr. Vander Weide claims on page
19 58 of his Rebuttal Testimony that in my DCF method "the cost of equity is based on
20 knowledge of the allowed rate of return on equity, and the allowed rate of return on equity

² My proxy group includes DESC's parent company Dominion Energy Inc.

³ Dr. Vander Weide's Direct Testimony, page 8, lines 18-19.

1 is based on knowledge of the cost of equity.” We can just as easily say the following: In
2 Dr. Vander Weide’s DCF method, the cost of equity is based on “knowledge of growth” in
3 earnings per share (in replace of “allowed rate of return on equity”), and the growth in
4 earnings per share is based on “knowledge of” the cost of equity. The authorized return on
5 equity and earnings per share are interchangeable because the allowed return will directly
6 impact the growth in earnings per share. As explained above, the DCF method is not
7 logically circular, however.

8 **Q. PLEASE RESPOND TO DR. VANDER WEIDE’S CLAIM THAT YOUR METHOD**
9 **FOR ESTIMATING FUTURE RATES OF RETURN ON BOOK EQUITY FOR**
10 **YOUR PROXY ELECTRIC COMPANIES IS SUBJECTIVE.**

11 **A.** My future rate of return on book equity is not subjective because it is based on historical
12 data and published projections from Value Line and Zacks. The 10.0% expected return on
13 equity I used in my DCF analysis is equal to the average of Value Line’s future expected
14 return on book equity projections (10.02%), return on equity to achieve Zacks EPS growth
15 rate (9.75%) and historical return on book equity between 2017 and 2019 (10.28%).

16 **Q. DR. VANDER WEIDE CLAIMS THAT THE WAY YOU CALCULATED YOUR**
17 **EXTERNAL FINANCING GROWTH RATE BIASES YOUR COST OF EQUITY**
18 **ESTIMATE DOWNWARD. PLEASE RESPOND.**

19 **A.** Dr. Vander Weide claims that the external financing growth rate I use in my DCF model
20 (1.26%) is too low because of my “decision to arbitrarily eliminate the three highest values

1 without eliminating the lowest values”⁴. Dr. Vander Weide’s criticisms are invalid because
2 my criteria allowed for the elimination of both high and low growth rates. As shown in
3 Exhibit ALR-4, page 4, I decided to eliminate external financing growth rates of companies
4 that are over 3 times the median result of all the companies in my proxy group and less
5 than 2 times the median of all the companies in my proxy group. I eliminated the
6 companies that have external financing growth rates that are greater than 3 times the
7 median or less than 2 times the median because it is unlikely that investors expect these
8 extremely high or low growth rates and therefore would over or understate the cost of
9 equity. I eliminated the three companies that had external financing growth rates above 3
10 times the median. No companies in my group had growth rates that are less than 2 times
11 the median.

12 **Q. PLEASE RESPOND TO DR. VANDER WEIDE’S CLAIM THAT YOU USE A**
13 **LOWER RETENTION RATE IN YOUR DCF MODEL THAN FORECASTED BY**
14 **VALUE LINE.**

15 **A.** Dr. Vander Weide’s claim that I did not use Value Line’s average retention ratio growth
16 forecast in my DCF method is meaningless because he is comparing Value Line’s short-
17 term forecast (2021) to the long-term forecast that I use in my constant growth DCF model.

⁴ Dr. Vander Weide’s Rebuttal Testimony, page 20-21.

III. CAPM ANALYSIS

Q. PLEASE SUMMARIZE DR. VANDER WEIDE'S CRITICISMS OF YOUR CAPM ANALYSIS.

A. Dr. Vander Weide a) disagrees with my use of the yield on the 3-month Treasury Bill and 30-year Treasury bonds as an estimate of the risk-free rate; and (b) claims that the CAPM underestimates the cost of equity for companies with betas less than 1.0 and I do not acknowledge this.

A. Risk-Free Rate

Q. HOW DO YOU RESPOND TO DR. VANDER WEIDE'S CRITICISM OF YOUR CHOICE OF ESTIMATES FOR THE RISK-FREE RATE?

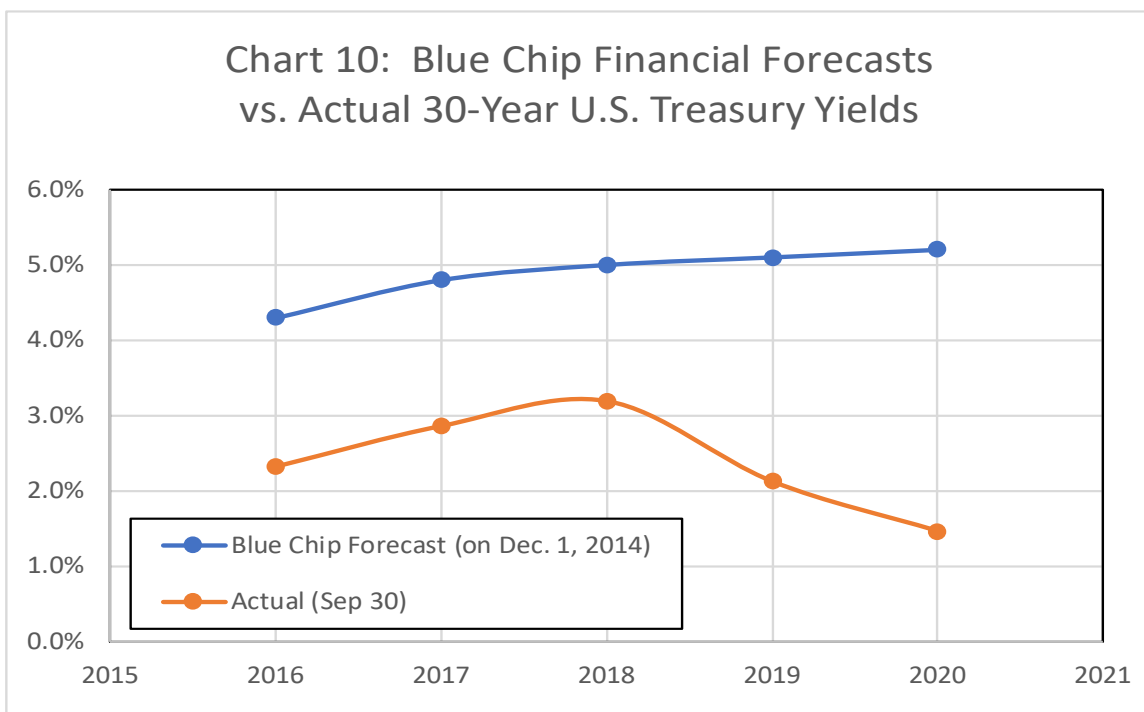
A. Dr. Vander Weide disagrees with the way I estimate my CAPM risk-free rate because it is based on the low interest rates the federal reserve has engineered to stimulate the economy. However, it does not matter why the cost of equity is what it is. If the cost of equity is lower because of actions taken by the Federal Reserve, there is no reason for consumers to pay electricity bills based on what the cost of equity might be in an alternative universe in which the Federal Reserve had chosen not to stimulate the economy.

Q. BUT ISN'T IT POSSIBLE THAT INTEREST RATES WILL INCREASE WHEN THE FEDERAL RESERVE DECIDES TO STOP STIMULATING THE ECONOMY?

A. It is certainly possible that interest rates will increase when the Federal Reserve determines that stimulating the economy is no longer necessary. However, it is not possible to

determine when that will be or what the interest rates will be at that time. As explained in my Direct Testimony, the current yields on Treasury bonds represent a direct observation of investor expectations. If investors expected long-term interest rates to increase in the future, it would be represented in current yield. It is not fair to charge consumers now for interest rates that might or might not be higher in the future especially when interest rate forecasts are inaccurate.

As Chart 10 from my Direct Testimony shows, Blue Chip Financial forecasted in 2014 that 30-Year U.S. Treasury bonds would be over 5% by 2018 while in fact they turned out to be under 2%.



B. Dr. Vander Weide's claim that the CAPM underestimates the cost of equity

1 research. The established and accepted methodology used by Value Line, Bloomberg,
2 Yahoo Finance, and every other source I know of that publishes historical betas is based
3 on a regression of historical returns between a company or industry portfolio and the
4 market at large. Different sources use different historical periods and return intervals. For
5 example, Value Line uses weekly returns over five years and Yahoo Finance uses monthly
6 returns over three years. However, the core methodology is consistent.

7 Even though Dr. Vander Weide's methodology seems to be based on a reworking
8 of the CAPM formula, I have not seen a calculation of beta based on the ratio of the
9 historical risk premia (returns minus a risk-free rate) as performed by Dr. Vander Weide
10 and I am not aware of any support or precedent for this methodology. Further, Dr. Vander
11 Weide uses annual return data. Shorter return intervals result in more data points and lead
12 to more precise results, which is why I use weekly return data in my historical beta
13 calculations, as does Value Line.

14 Applying the standard regression methodology for the calculation of beta to the
15 annual return data presented by Dr. Vander Weide⁶ results in a beta of 0.73.⁷ This result
16 is significantly below the 0.89 calculated by Dr. Vander Weide and below my hybrid beta
17 of 0.76, which is composed of 50% historical beta calculations. While I do not support the
18 use of annual return data for the calculation of beta, I have included this calculation simply
19 to illustrate that using an established methodology on the same data presented by Dr.
20 Vander Weide results in a considerably lower value for beta than the 0.89 he calculates.

⁶ See the second and third columns of Exhibit JVW-11 of Dr. Vander Weide's Direct Testimony. The same data is presented in the second and third columns of Exhibit ALR-1S.

⁷ This can be easily performed using the "SLOPE" function of Excel.

1 Applying Dr. Vander Weide's methodology to calculate betas on a year-by-year
2 basis provides further support for the invalidity of his approach. Exhibit ALR-1S presents
3 the same data on Dr. Vander Weide's Exhibit JVW-11, with an extra seventh column to
4 the right calculating the ratio of the risk premium on utilities to the risk premium on the
5 market portfolio for each year (Dr. Vander Weide "Beta"). As can be easily seen, the
6 values for this approach to calculating beta fluctuate widely from year to year, with a
7 maximum value of 36.62, a minimum value of -87.57, an average value of -1.15, and a
8 standard deviation of 13.69. None of these measures would be acceptable for a range of
9 possible betas for a utility company. Yet, Dr. Vander Weide uses these widely fluctuating
10 numbers in his calculation of his 0.89 beta.

11 The results of Dr. Vander Weide's cost of capital calculations relying on a value of
12 0.89 for beta should be disregarded.

13 **Q. DR. VANDER WEIDE USES THE AVERAGE VALUE LINE BETA OF 0.87 FOR**
14 **VALUE LINE ELECTRIC UTILITIES IN HIS CAPM. IS THE USE OF THIS**
15 **BETA IN DR. VANDER WEIDE'S ANALYSIS VALID?**

16 **A.** No, it is not. A critical factor in the calculation of beta is the choice of index to represent
17 the overall market. Using the same beta calculation methodology with a different market
18 index will result in different values of beta for a given company or portfolio – sometimes
19 drastically different values. It is easy to jump to the conclusion that this points to a flaw in
20 the CAPM methodology, as different values of beta would result in a different implied cost
21 of equity. However, another key component of the CAPM, the market risk premium, also
22 depends on the choice of market index and in theory would have an offsetting effect on the
23 cost of equity calculation. This points to the most important aspect of selecting a market

1 index for a CAPM analysis, which is to be consistent and use the same index for the
2 calculation of beta as for the calculation of the market risk premium.

3 Dr. Vander Weide is not consistent in this critical point. His equity risk premium
4 is not based on the same market index used to calculate his beta of 0.87 provided by Value
5 Line. Value Line calculates its published betas based on the NYSE Composite Index.
6 Neither of the two methodologies Dr. Vander Weide uses to calculate the market risk
7 premium⁸ are based on the NYSE Composite Index. One is based directly on the DCF cost
8 of equity for the S&P 500 and the other is based on historical risk premium data (1926-
9 2019) reported in the 2020 SBBI Yearbook. When applying the CAPM, it is imperative to
10 use betas and a market risk premium based on the same market index. This is a
11 fundamental concept of the CAPM and using betas based on one index with a market risk
12 premium based on a different index, as Dr. Vander Weide has done, yields invalid results.

13 On the same vein, even though Value Line's average beta of 0.87 appears to be in
14 line with the 0.89 results of his unsupported "ratio of historical risk premia" methodology
15 addressed in the prior question, the two betas are based on different market indices, making
16 it inappropriate to compare the two side by side. Dr. Vander Weide used S&P 500 return
17 data in the calculation of his 0.89 beta⁹ while Value Line calculates betas based on the
18 NYSE Composite Index. Using Value Line's exact methodology for calculating beta, but
19 using the S&P 500 Index instead of the NYSE Composite Index, results in a five-year beta
20 which averages 0.702 between July and September 2020, as presented in Exhibit ALR-5,

⁸ Direct Testimony of James H. Vander Weide, Page 37, Lines 26 to Page 38, Line 4.

⁹ Direct Testimony of James H. Vander Weide, Exhibit JVW-11.

1 page 3 of my Direct Testimony. This result is significantly out of line with Dr. Vander
2 Weide's value of 0.89 and well in line with my betas of 0.62 and 0.76.

3 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS REGARDING DR. VANDER**
4 **WEIDE'S CRITICISMS OF YOUR CAPM ANALYSIS AND THE RESULTS OF**
5 **HIS CAPM ANALYSIS.**

6 **A.** As detailed in this section, each of Dr. Vander Weide's criticisms of the components of my
7 CAPM method are either inaccurate, incomplete, or based on irrelevant evidence. None of
8 them can be considered a basis for invalidating my approach.

9 Furthermore, since Dr. Vander Weide did not present any valid betas based on the
10 S&P 500 Index to be used with his market risk premia based on that index, the entire results
11 of his CAPM analysis should be disregarded.

12 **IV. CAPITAL STRUCTURE AND COST OF DEBT**

13 **Q. DESC WITNESS FETTER BELIEVES THAT YOUR 50/50 EQUITY/DEBT**
14 **RATIO WOULD WEAKEN DESC'S OVERALL CREDIT PROFILE. PLEASE**
15 **RESPOND.**

16 **A.** As stated in my Direct Testimony, my recommend capital structure containing 50%
17 common equity and 50% debt is within the range identified by the Commission as part of
18 the merger between Dominion and SCANA. However, it is higher than the 46.7% average
19 common equity ratio (excluding short-term debt) of the companies in the electric proxy
20 group. See Exhibit ALR-6, page 5. As I previously noted in my Direct Testimony,
21 fortifying the common equity ratio of DESC while at the same time reducing the common

1 equity ratio of Dominion is counterproductive. Mr. Fetter's Rebuttal Testimony
2 supports my position. The primary reason he gives to support his capital structure
3 recommendation is improving DESC's credit rating in order to increase its capacity to
4 handle unexpected financial hardship. He uses the experiences of Consolidated Edison
5 (after the September 11 terrorist attacks) and Entergy New Orleans (ENO) (after Hurricane
6 Katrina) as examples. As explained by Mr. Fetter, ENO's parent provided \$200 million in
7 funds to support the long process of reorganization and recovery after Hurricane Katrina.¹⁰

8 Mr. Fetter's examples demonstrate that the capital structure of a utility is only part
9 of the picture and that the financial resources of a utility's parent matters too. If DESC
10 were to experience a devastating hurricane, the financial resources of its parent, Dominion
11 Energy, would be a factor as they were in ENO's reorganization and recovery.

12 DESC could benefit from the highest possible credit rating, but at what cost to
13 consumers? Equity costs more than debt. I determined that consumers would have to pay
14 over \$4 million, and possibly as much as \$14 million, annually for DESC to have a capital
15 structure with 53.35% common equity versus a capital structure with 50% common equity.
16 Furthermore, DESC's consumers would not get the full benefit of any potential DESC
17 credit rating increase because its parent Dominion Energy's capital structure has only 45%
18 common equity and, according to Value Line, will have only 42.5% common equity in
19 2021.¹¹ Therefore, as recommended in my Direct Testimony, DESC's rates should be set
20 based on a regulatory capital structure of no more than 50% common equity until Dominion

¹⁰ Fetter Rebuttal Testimony, page 20, line 1-13

¹¹ See my Direct Testimony, page 11 line 15 – page 12 line 19.

1 Energy brings its common equity ratio more in line with the Commission's prior directive
2 for DESC.

3 **Q. IN YOUR DIRECT TESTIMONY YOU STATED THAT YOU ARE CONCERNED**
4 **WITH DESC'S REQUESTED COST OF DEBT OF 6.46% BECAUSE IT IS**
5 **LIKELY SIGNIFICANTLY HIGHER THAN DESC'S CURRENT COST OF**
6 **DEBT. AFTER READING ORS WITNESS KOLLEN'S DIRECT TESTIMONY,**
7 **WHAT COST OF DEBT DO YOU RECOMMEND?**

8 **A.** I recommend a cost of debt of 5.56%, the rate adopted by the Commission in Docket No.
9 2017-370-E. As explained in my Direct Testimony, DESC offered over \$1 billion worth
10 of First Mortgage Bonds in September 2019 with coupon rates ranging from 4.25% and
11 4.60%.¹² As of November 10, 2020, one of those first mortgage bonds (due on May 15
12 2049) has a market yield of 3.306%.¹³ DESC is entitled to earn a higher cost of debt than
13 current market rates if its actual cost of debt is higher because interest rates decline.
14 However, the reason DESC's actual cost of debt of 6.46% is higher than market rates are
15 not solely because of changes in interest rates. As ORS witness Kollen explains, DESC's
16 "debt was excessive due to Summer 2 and 3 disallowances and related write-offs", among
17 other reasons.¹⁴

18 DESC's cost of debt should be 5.56% as adopted by the Commission in Docket No.
19 2017-370-E because DESC's cost of debt went from 5.56% to the 6.46% requested by the

¹² <https://news.dominionenergy.com/2019-09-12-Dominion-Energy-South-Carolina-Announces-Pricing-of-Tender-Offer>

¹³ Finra-markets.morningstar.com - Nov 10 2020 - DESC - 4.350% First Mortgage Bond Yield due 2049.

¹⁴ Mr. Kollen's Direct Testimony, page 11-12.

Company in this proceeding because of the cancellation of V.C. Summer Units 2 and 3. In Order No. 2018-804(A), the Commission required that the V.C. Summer Units 2 and 3 cancellation costs not be included in base rates; therefore DESC's cost of debt should be set at what it would be if the project had not been canceled and that is 5.56%.

Q. HOW DOES REDUCING YOUR COST OF DEBT RECOMMENDATION FROM 6.46% TO 5.56% IMPACT YOUR OVERALL COST OF CAPITAL RECOMMENDATION.

A. Reducing my cost of debt recommendation from 6.46% to 5.56% reduces my overall rate of return recommendation from 7.55% to 7.10%. I recommend the following revised cost of capital for DESC's retail electric service operations:

- An overall cost of capital of 7.10% (6.88% - 7.31%)
- A cost of equity of 8.63% (8.19% - 9.07%)
- A capital structure containing 50.00% common equity and 50.00% debt
- A debt cost rate of 5.56%

A summary of my cost of capital recommendations for DESC's retail electric service operations is presented in Table 1 – Revised below.

TABLE 1: ALR RECOMMENDATION - DOMINION ENERGY SOUTH CAROLINA, INC.			
Revised			
Docket No. 2020-125-E			
	Capital Structure Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	50.00%	5.56%	2.78%
Common Equity	50.00%	8.63%	4.32%
Rate of Return	100.00%		7.10%

1 My revised recommendation would save consumers about \$26 million annually
2 compared to the cost of capital recommendation in my Direct Testimony. This results in a
3 savings of \$103 million compared to the Company's requests.

4 V. CONCLUSION

5 **Q. PLEASE SUMMARIZE YOUR REACTION TO DR. VANDER WEIDE'S**
6 **REBUTTAL TESTIMONY.**

7 **A.** Dr. Vander Weide's criticisms of my Direct Testimony are unsupported and should be
8 rejected. As stated in my Direct Testimony, *Hope* and *Bluefield* require that a utility be
9 given the "opportunity to earn a return commensurate with returns on investments in other
10 enterprises having corresponding risks."¹⁵ If adopted, my cost recommendations would
11 allow DESC to raise the capital it needs to provide safe and reliable service because my
12 recommendations are consistent with investors' return expectations.

13 **Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?**

14 **A.** Yes.
15

¹⁵ Direct Testimony, page 87, lines 17-19.

Exhibit ALR-1S, page 1 of 2**Annual Betas Based on Dr. Vander Weide's Method of Estimating Beta from a Comparison of Risk Premia on S&P 500 and S&P Utilities 1937 Through 2019**

YEAR	S&P UTILITIES STOCK RETURN	S&P 500 STOCK RETURN	10-YR. TREASURY BOND YIELD	UTILITIES RISK PREMIUM	MARKET RISK PREMIUM	DR. VANDER WEIDE "BETA"
2019	0.2579	0.2781	0.0214	0.2365	0.2566	0.92
2018	0.0367	-0.0456	0.0291	0.0076	-0.0747	-0.10
2017	0.1172	0.2471	0.0233	0.0939	0.2238	0.42
2016	0.1744	0.2080	0.0184	0.1560	0.1896	0.82
2015	-0.0390	-0.0332	0.0214	-0.0604	-0.0546	1.11
2014	0.2891	0.1339	0.0254	0.2637	0.1085	2.43
2013	0.1301	0.2524	0.0235	0.1066	0.2289	0.47
2012	0.0209	0.1602	0.0180	0.0029	0.1422	0.02
2011	0.1999	0.0325	0.0278	0.1721	0.0047	36.62
2010	0.0704	0.1618	0.0322	0.0382	0.1296	0.29
2009	0.1071	0.3291	0.0326	0.0745	0.2965	0.25
2008	-0.2590	-0.3516	0.0367	-0.2957	-0.3883	0.76
2007	0.1656	-0.0138	0.0463	0.1193	-0.0601	-1.99
2006	0.2076	0.1320	0.0479	0.1597	0.0841	1.90
2005	0.1605	0.1001	0.0429	0.1176	0.0572	2.06
2004	0.2284	0.0594	0.0427	0.1857	0.0167	11.12
2003	0.2348	0.2822	0.0401	0.1947	0.2421	0.80
2002	-0.1473	-0.2005	0.0461	-0.1934	-0.2466	0.78
2001	-0.1790	-0.1347	0.0502	-0.2292	-0.1849	1.24
2000	0.3278	-0.0513	0.0603	0.2675	-0.1116	-2.40
1999	-0.0172	0.1546	0.0564	-0.0736	0.0982	-0.75
1998	0.1547	0.3125	0.0526	0.1021	0.2599	0.39
1997	0.1858	0.2768	0.0635	0.1223	0.2133	0.57
1996	0.0383	0.2702	0.0644	-0.0261	0.2058	-0.13
1995	0.3749	0.3493	0.0658	0.3091	0.2835	1.09
1994	-0.0383	0.0105	0.0708	-0.1091	-0.0603	1.81
1993	0.1095	0.1156	0.0587	0.0508	0.0569	0.89
1992	0.1246	0.0750	0.0701	0.0545	0.0049	11.12
1991	0.1425	0.3165	0.0786	0.0639	0.2379	0.27
1990	0.0033	-0.0085	0.0855	-0.0822	-0.0940	0.87
1989	0.3468	0.2276	0.0850	0.2618	0.1426	1.84
1988	0.1480	0.1761	0.0884	0.0596	0.0877	0.68
1987	-0.0574	-0.0213	0.0838	-0.1412	-0.1051	1.34
1986	0.3787	0.3095	0.0768	0.3019	0.2327	1.30
1985	0.3000	0.2583	0.1062	0.1938	0.1521	1.27
1984	0.1995	0.0741	0.1244	0.0751	-0.0503	-1.49
1983	0.2016	0.2012	0.1110	0.0906	0.0902	1.00
1982	0.3020	0.2896	0.1300	0.1720	0.1596	1.08
1981	0.0940	-0.0700	0.1391	-0.0451	-0.2091	0.22
1980	0.1301	0.2534	0.1146	0.0155	0.1388	0.11
1979	0.0879	0.1652	0.0944	-0.0065	0.0708	-0.09
1978	0.0396	0.1580	0.0841	-0.0445	0.0739	-0.60
1977	0.0416	-0.0906	0.0742	-0.0326	-0.1648	0.20

Exhibit ALR-1S, page 2 of 2**Annual Betas Based on Dr. Vander Weide's Method of Estimating Beta from a Comparison of Risk Premia on S&P 500 and S&P Utilities 1937 Through 2019**

1976	0.2270	0.1096	0.0761	0.1509	0.0335	4.50
1975	0.3224	0.3856	0.0799	0.2425	0.3057	0.79
1974	-0.1429	-0.2086	0.0756	-0.2185	-0.2842	0.77
1973	-0.1345	-0.1614	0.0684	-0.2029	-0.2298	0.88
1972	0.0512	0.1758	0.0621	-0.0109	0.1137	-0.10
1971	-0.0007	0.1381	0.0616	-0.0623	0.0765	-0.81
1970	0.1945	0.0708	0.0735	0.1210	-0.0027	-44.81
1969	-0.1438	-0.0840	0.0667	-0.2105	-0.1507	1.40
1968	0.0528	0.1045	0.0565	-0.0037	0.0480	-0.08
1967	0.0022	0.1605	0.0507	-0.0485	0.1098	-0.44
1966	-0.0172	-0.0648	0.0492	-0.0664	-0.1140	0.58
1965	0.0134	0.1135	0.0428	-0.0294	0.0707	-0.42
1964	0.1611	0.1570	0.0419	0.1192	0.1151	1.04
1963	0.0947	0.2082	0.0400	0.0547	0.1682	0.33
1962	0.0425	-0.0284	0.0395	0.0030	-0.0679	-0.04
1961	0.2247	0.1894	0.0388	0.1859	0.1506	1.23
1960	0.2252	0.0618	0.0412	0.1840	0.0206	8.93
1959	0.0500	0.0757	0.0433	0.0067	0.0324	0.21
1958	0.3688	0.3974	0.0332	0.3356	0.3642	0.92
1957	0.0790	-0.0518	0.0365	0.0425	-0.0883	-0.48
1956	0.0716	0.0714	0.0318	0.0398	0.0396	1.01
1955	0.1016	0.2840	0.0282	0.0734	0.2558	0.29
1954	0.2237	0.4552	0.0240	0.1997	0.4312	0.46
1953	0.0962	0.0270	0.0281	0.0681	-0.0011	-61.91
1952	0.1536	0.1405	0.0248	0.1288	0.1157	1.11
1951	0.1710	0.2039	0.0241	0.1469	0.1798	0.82
1950	0.0460	0.3230	0.0205	0.0255	0.3025	0.08
1949	0.2783	0.1610	0.0193	0.2590	0.1417	1.83
1948	0.0541	0.0928	0.0215	0.0326	0.0713	0.46
1947	-0.1041	0.0199	0.0185	-0.1226	0.0014	-87.57
1946	-0.0700	-0.1203	0.0174	-0.0874	-0.1377	0.63
1945	0.5789	0.3818	0.0173	0.5616	0.3645	1.54
1944	0.2065	0.1879	0.0209	0.1856	0.1670	1.11
1943	0.3745	0.2298	0.0207	0.3538	0.2091	1.69
1942	0.1736	0.2087	0.0211	0.1525	0.1876	0.81
1941	-0.2838	-0.0898	0.0199	-0.3037	-0.1097	2.77
1940	-0.1652	-0.0965	0.0220	-0.1872	-0.1185	1.58
1939	0.1126	0.0189	0.0235	0.0891	-0.0046	-19.37
1938	0.1954	0.1836	0.0255	0.1699	0.1581	1.07
1937	-0.3693	-0.3136	0.0269	-0.3962	-0.3405	1.16
Risk Premium 1937 to 2019				0.0568	0.0635	
RP Utilities/RP SP500				0.89		
Slope of Regression of Utilities vs. SP500 Returns				0.73		
					Maximum	36.62
					Minimum	-87.57
					Average	-1.15
					Std. Dev.	13.69